P1 1128110

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February 13, 2004

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APPLICATION NUMBER: *60/431,621*
FILING DATE: *December 06, 2002*
RELATED PCT APPLICATION NUMBER: *PCT/US03/38895*

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

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Certifying Officer

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. EV194865275US

INVENTOR(S)		
Given Name (first and middle (if any))	Family Name or Surname	Residence (City and either State or Foreign Country)
John Walter	Englert	Carmel, Indiana

☐ *Additional inventors are being named on the _____ separately numbered sheets attached hereto*

TITLE OF THE INVENTION (280 characters max)

TUNER HEAT REDUCTION IN STANDBY

CORRESPONDENCE ADDRESS

Direct all correspondence to:

☐ Customer Number [ ] → *Place Customer Number Bar Code Label here*

OR *Type Customer Number here*

☒ Firm or Individual Name	JOSEPH S. TRIPOLI, THOMSON MULTIMEDIA LICENSING INC.				
Address	PATENT OPERATIONS.				
Address	P. O. BOX 5312				
City	PRINCETON	State	NJ	ZIP	08543-5312
Country	USA	Telephone	609-734-6834	Fax	609-734-6888

ENCLOSED APPLICATION PARTS *(check all that apply)*

☒ Specification *Number of Pages* 3 ☐ CD(s), Number

☒ Drawing(s) *Number of Sheets* 1 ☐ Other (specify)

☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT *(check one)*

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check or money order is enclosed to cover the filing fees

FILING FEE AMOUNT ($)

☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 07-0832 — 160

☐ Payment by credit card. Form PTO-2038 is attached.

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____.

Respectfully submitted,

SIGNATURE Robert D Shedd Date 12/6/02

TYPED or PRINTED NAME Robert D. Shedd REGISTRATION NO. *(if appropriate)* 36,269

TELEPHONE 609 734-6828 Docket Number: PU020491

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT ($) 160

Complete If Known	
Application Number	
Filing Date	
First Named Inventor	John Walter Englert
Examiner Name	
Group / Art Unit	
Attorney Docket No.	PU020491

METHOD OF PAYMENT (check one)

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit Account Number: 07-0832

Deposit Account Name: THOMSON multimedia Licensing Inc.

☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☐ Applicant claims small entity status. See 37 CFR 1.27

2. ☐ Payment Enclosed:

☐ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	160

SUBTOTAL (1) ($) 160

2. EXTRA CLAIM FEES

			Extra Claims		Fee from below	=	Fee Paid
Total Claims		-20 **	= 0	X		=	0
Independent Claims		-3 **	= 0	X		=	0
Multiple Dependent				X		=	0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

**or number previously paid, if greater, For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet.	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive – unavoidable	
141	1,280	241	640	Petition to revive – unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17 (q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1 129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) ____

*Reduced by Basic Filing Fee Paid SUBTOTAL (3) ($) 0

SUBMITTED BY

					Complete (if applicable)
Name (Print/Type)	Robert D Shedd	Registration No. Attorney/Agent	38,269	Telephone	609-734-6828
Signature	Robert D Shedd			Date	December 6, 2002

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PU020491

Tuner Heat Reduction in Standby

Signal processing apparatus, such as the ATC-311 color television receiver chassis produced by Thomson of Indianapolis, Indiana, typically include signal processing circuitry that may be configured in the form of a module. An example of such a module is a module referred to herein as the DM2 that is also produced by Thomson. Such a module typically includes various components and may also include a tuner for selecting a particular signal or channel from a plurality of signals or channels received by the apparatus. A module such as the DM2 may process signals digitally and do so at high data rates. One potential result of high-speed signal processing is that temperature rise of components used in the DM2 may approach or exceed reliability limits.

In addition, signal processing apparatus may have various modes of operation. For example, a color television receiver may be completely disconnected from a power source (power plug disconnected), the receiver may have a "standby" mode of operation (connected to a power source and capable of receiving and processing remote control commands (such as an "on" command) but not operational for producing audio or video output signals), and an "on" or "run" mode of operation (system is fully operational). During certain modes of operation, e.g., "standby" mode, certain system components may be disabled, e.g., to reduce power consumption and noise. In particular, components such as a cooling fan intended to minimize excessive temperature rise of components may be disabled. As a result, component heating in a module such as the DM2 may be exacerbated during a mode of operation such as "standby" mode.

A system described herein solves the described problem by reducing or turning off power supplied to the tuner, e.g., "main" power supply, during one or more modes of operation of the system, e.g., a "standby" mode of operation, thereby reducing heat generation and extending the overall life of the product. As a specific example, by disconnecting the main power supplies to the tuner, internal self-heating of the tuner and subsequent heating of the DM2 module is reduced during the standby mode.

An exemplary embodiment of the described system is shown in the Figure. In the Figure, in order to turn 'OFF' the main power supplies to the tuner, a control signal (TUN1_CNTL) is provided. The state of this control signal is determined by the main CPU, which has sufficient information from various inputs (e.g., a "power off" signal received from a remote control not shown in the Figure) to know when the module should be put into standby. To reduce unnecessary heat generation in the standby mode, two FET transistor switches are used to disconnect the +5V and +12V supplies from the tuner. The control signal goes high in the standby mode and turns 'ON' a NPN transistor (Q24308), this transistor then causes a PNP transistor (Q24307) to turn 'ON'. When the PNP transistor turns 'ON', it applies the correct gate bias voltage to the FET transistors (U24304) for them to turn 'ON' and have low resistance. Low cost N-channel FET transistors can be used because of the availability of the +33V supply to the tuner. Through a resistive divider network (R24339, R24337 and R24335), the appropriate drive voltages to the two different FET transistor switches can be set-up. By the use of this divider network, the voltage applied to each of the gates is correct for the power supply to be switched and not overdrive the gate to source voltage. By the use of these two FET transistor switches, 96 % of the tuner power dissipated is removed in the standby mode. FET switches are used over bipolar switches in order to minimize the amount of power required to turn the tuner 'ON' or 'OFF'.

Another embodiment of the described system involves a device, such as a color television receiver or video signal processing apparatus, that includes capability for simultaneously processing both first and second video signals and for processing auxiliary information. As an example, some video signal processing systems receive and process a first video signal to produce a first output signal representing a first, or "main", image and receive and process a second video signal to produce a second output signal representing a second or auxiliary image. The first and second output signals may be coupled to a display device to produce a displayed image including both the main image and the auxiliary image. A specific example of such systems is a picture-in-picture (PIP) or picture-outside-picture (POP) television system. Such systems may, for example, include

first and second tuners for simultaneously and independently selecting the respective first and second video signals that will be processed to produce the respective first and second image-representative output signals. In such systems, e.g., a color television receiver with PIP capability, it may also be desirable to provide for receiving and processing auxiliary information. For example, in addition to receiving video and audio signals associated with television programming, it may also be desirable to receive auxiliary information such as Gemstar data, that can be processed to produce an on-screen-display (OSD) such as an electronic program guide (EPG) to simplify and facilitate user interaction with the television receiver. In such systems, it may be desirable to include an additional circuit similar or identical to that described above and shown in the Figure to control the second tuner, e.g., PIP-image signal tuner. In addition to providing a picture in picture display on the TV screen, in a system such as the ATC-311 produced by Thomson, the PIP tuner, when the TV is in standby mode, may be used for Gemstar data collection. To receive and process auxiliary information such as Gemstar data, the tuner must receive power and be operational so that the channel or signal carrying the data can be selected and provided to the signal processing circuitry. To provide the capability to receive and process auxiliary information while also solving the above-described component heating problem, the system provides for turning a tuner on for a particular time period during standby mode, i.e., an interval or portion of the standby period, during which the auxiliary information can be collected and processed. For example, a control device such as a microprocessor included in the system responds to activation of a particular mode of operation such as standby mode by activating a process for controlling power to the tuner. The process includes turning the tuner, e.g., the PIP tune, on for a particular amount of time to collect data and then turn the PIP tuner off (e.g., the duty cycle may be around 30%). The time period or frequency of the power-on data-collection intervals may be varied in response to various factors. For example, the tuner on-time may be varied in response to component temperature (on for longer periods as long as temperature is within acceptable limits). Tuner on-time might also be varied in response to the amount of data to be collected or the data rate, i.e., increase on-time if more data must be received and processed or if a slower data rate requires more processing time, as long as component temperatures are acceptable.

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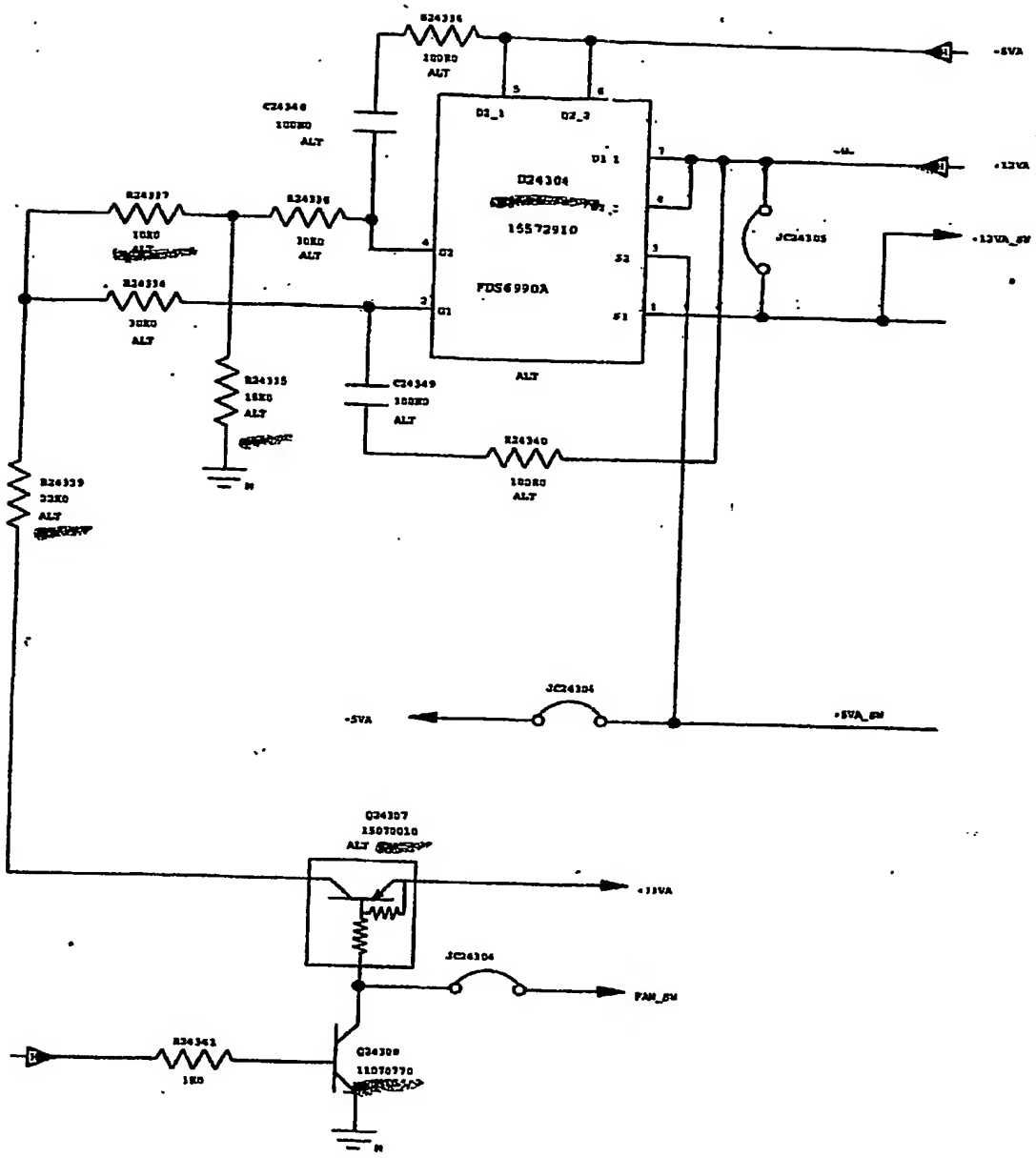
R24336
100KΩ
ALT
+5VA
C24348
100KΩ
ALT
D2_1
D2_2
D1_1
Q24304
15572910
FDS6990A
ALT
+12VA
JC24305
+12VA_SW
R24337
10KΩ
ALT
R24335
30KΩ
ALT
R24334
30KΩ
ALT
G2
G1
S2
S1
R24335
15KΩ
ALT
C24349
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R24340
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CNTL
R24342
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Q24308
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